Beyond Einstein E&PO Strategy Status Report

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SEUS Meeting

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Historical Context

- Results of External Review of OSS Education programs was a starting point for analysis.
  - Report submitted in March 2003.
  - Noted significant achievements in E&PO and provided direction for next several years.
  - Suggested that OSS has generated considerable information in various forms to the formal education community, but educators have trouble navigating to the data that they need. (integration issue)
  - The science message rather than the mission must be the obvious focus. (content issue)
- Additionally, we have noted peculiar challenges related to teaching “Beyond Einstein” physics (as well as ramifications for public outreach).

Fall ‘03 Workshop

- Invited representation from all the OSS E&PO infrastructure elements.
- Operating assumptions included;
  - Recognition that we cannot attempt to solve all problems at once
  - Ramped funding for E&PO would appear via the Beyond Einstein Program Office at GSFC beginning in FY-05.
- Direction from HQ was (and continues to be) to use this year to plan and find linkages for collaborative efforts.

Transitional Challenges for Middle School and High School

- What information does the formal science education community need at various levels?
  - 50 states with 50 different approaches
  - Need to coordinate with national organizations and standards makers in design of future products.
  - Suggested national science standards are not being followed consistently among the states for MS and HS level.
  - There are differing demands/products required at the student level.
- The OSS Framework Initiative is intended to provide context and a foundation in order to address alignment of our future products to national science standards.

Target of Opportunity (Middle School/High School)

- New collaborations are required internal to NASA (across OSS Themes) to ensure consistency of science content provided.
- Ideally, interagency coordination would be helpful to the education community.
- New tools are needed to improve understanding of the physics concepts, and integrated with more traditional education products.

Target of Opportunity
Two Year Colleges

Curricula for junior college level (introductory astronomy) physics courses were varied. (External source finding)

- Problems included inadequate materials/texts.
- Important target audience.
- Teacher's colleges are not always providing the depth in science subject matter to make future science teachers confident to teach the material.

Collaboration Potential with National Organizations

- We are having discussions with the NSTA to determine where we can influence the science education system to become more aware of Beyond Einstein.
  - Involved NSTA in the first BE planning workshop and will continue that linkage with the encouragement of Code N.
  - Short course development (Forum organized) will likely lead to other developments as we receive feedback. This course will debut at NSTA national meeting in April.

  (Future plans include establishing contact with NCTM and others headquartered in the DC area).

Current Initiatives w/ DoE

- We are working with DoE on the creation of a sustained collaboration in both the education (workforce development) arena and in the public outreach domain.
  - DoE participated in a December outreach workshop at Goddard.
  - Participation in SpacePart 03 in December resulted in establishing contacts with Quarknet community.
- Current discussion includes organizing a science symposium and evening event in the DC area to celebrate the Einstein Centenary in 2005. This would involve the American Physical Society as well as NSF.

Other Current Initiatives

- We are establishing a collaboration with the American Association of Physics Teachers
  - Benchmarking what works in undergraduate physics instruction/what is needed to optimize understanding.
- Potential collaboration with Navigator program leveraging their existing efforts with community colleges and the AAPT.
- Developing materials for AAPT Resource Agents in conjunction with SEC on “How we see the EM Spectrum”

A New Tool for Public Outreach and Education

- Recent demo at the Atlanta AAS showed the power and attraction of high definition animation.
- Future Beyond Einstein missions will depend upon such visualization tools to provide sustained understanding of the science both for the formal and informal venues.
- We are discussing the potential for next generation electronic theater projects as well as planning to have available by this March, a Beyond Einstein overview video animation that would include information on the future Einstein Probes.

Future Activities

- We are planning to have additional workshops this year that will focus on the target areas mentioned.
- Additionally, we will use the time to gain greater appreciation for organizations with whom we can immediately collaborate.
- Development of a long-term plan will flow with the results of the Framework Initiative, and the availability of Agency funding to coordinate staffing, training, and the development of materials in these niche areas.